

# The Potato News Bulletin

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**The Potato Association of America**

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## ANNOUNCEMENT

It gives us no little pleasure to be able to announce the admission of "**The Potato News Bulletin**" to second-class postal mailing privilege. While this effects some saving in the mailing of the **Bulletin**, the chief advantage is that of its recognition by the postal authorities as a standard publication. This fact encourages the writer to again appeal to the members of the Association for a more generous support of the **Bulletin** through more frequent contributions to its pages, either in the form of potato notes, brief articles or reviews of literature. Attention is called to the contribution in this number of "A Glance at the Markets," by the Fruit and Vegetable Division of the Bureau of Agricultural Economics. This excellent review of the market situation is especially timely and it is hoped that it is but the forerunner of better things to come.

The August and September issues should contain a large number of reports on the condition of the potato crop in every state and province where there are members of the Association.

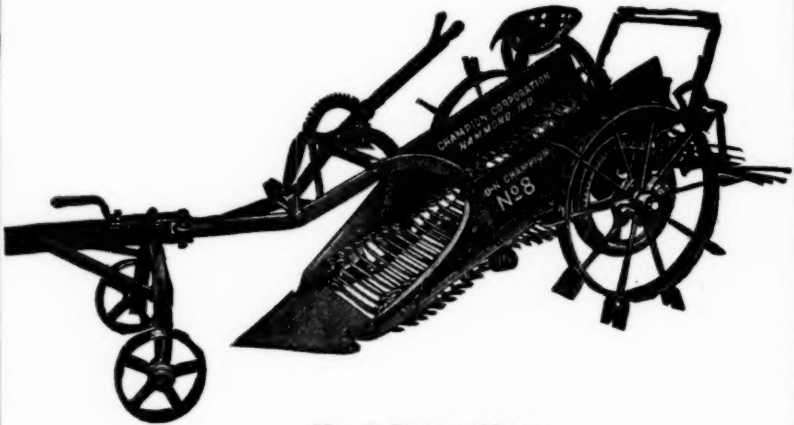
Let us make the **Bulletin** a snappy up-to-date publication filled with interesting news notes, short articles and reviews. The excuse that you are too busy to write is not a valid one because it is always the real busy man that does the worth-while things in life. If writing is your "bete noir" you can still do something; a thousand new members are wanted at once. Won't you help us secure them? Membership application blanks will be forwarded to you on request of same.

The time has arrived when the program committee must begin to give serious consideration to the program for our next annual meeting. At an informal meeting of three members of the Executive Committee on June 28 the following subjects were suggested for symposiums: Seed treatment; degeneration or virus diseases; seed improvement work. If you have a subject you would like discussed, won't you kindly write us about it? With your help it

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will be possible to make our 1924 annual meeting better than that of 1923. Let us have your suggestions at once in order that the committee may have ample time to prepare a well-rounded program.—W. Stuart.

## POTATO NOTES

**British Columbia.**—Potato statistics gathered to date indicate that a smaller acreage is being planted this year than in 1923. Ladner and Delta districts have 833 acres this year against 826.75 acres last year, while Lulu Island and Sea Island districts have 1041.75 acres this year, against 1510.75 acres last year. The acreage on Vancouver Island appears to be small—Keatings and Sidney districts have about 100 acres, other districts not covered yet.

Applications for inspection of certified seed fields are coming in rapidly. To date, 89 applications are in for 176.5 acres, an average of 2 acres per grower. Last year 150 growers applied for inspection for 177 acres. From present indications we should have about 175 to 200 growers with from 350 to 400 acres to inspect.

Growers are putting in larger fields this year, and there are several new applicants on the list.

There was a big demand this year for certified seed. All early varieties were disposed of by the growers very early in the season and the demand for late varieties was good, especially the Sir Walter Raleigh, which could not meet 25 per cent of the requests for it. There is a bigger increase in the acreage of Sir Walter Raleighs than any other variety, and they promise to become a very outstanding commercial potato, giving excellent yields of good quality potatoes when grown on high, dry land.

Potatoes have been selling at a good price since digging time, and now Canadian A grade old potatoes retail at \$3.00 per bag of 100 pounds. New potatoes are on the market and are being retailed at 25 cents per pound.—C. W. Tice.

**Los Angeles County (Calif.), June 15.**—Both acreage and condition of the potato crop in Los Angeles and neighboring counties is far below normal this spring. With less than half of the normal rainfall the past winter, many potatoes were planted in dry soil, which however was moistened by late rains. The present and prospective shortage of irrigation water has tended to curtail acreage. The San Fernando Valley which usually has from five to ten thousand acres of spring potatoes and a considerable acreage in fall crop besides, is being limited sharply on amount of water allowed, which will tend to further decrease the acreage of late potatoes planted. Digging of extra early potatoes commenced about June 1 and prices have been fairly satisfactory. Practically all the crop consists of White Rose, though several lots of Cobblers were seen on the market, these being offered at 25 cents per lug (35 pounds) less than White Rose.

A peculiar trouble has occurred in Southern California this year in the way of poor stands. In many fields only 25 or 30 per cent stand was obtained, and stands of only 60 to 70 per cent are common. No connection between local conditions and per cent stand can be established. However, tracing back to the origin of the seed potatoes used, it is found that the trouble occurs wherever seed from the hotter inland sections produced last fall, was used. Seed grown at Temecula at an elevation of 1300 feet under cooler and more humid conditions than those prevailing last fall in the Los Angeles section, and more or less favored by proximity to the coast, has generally given satisfactory stands. In short, it appears that the local seed was injured last fall by high temperatures the latter part of the growing season, in conjunction with shortage of water and absence of fall rains. A considerable proportion of the seed potatoes planted showed internal browning or "heat necrosis." Such potatoes when cut and planted, failed to sprout, or sent out only weak, spindly sprouts. As no leaf roll can be found in fields affected with this trouble, no connection with that disease is apparent. Use of seed potatoes from higher, cooler or more humid sections is being suggested as a means of preventing this trouble in the future, or if locally grown potatoes are to be used for seed, late irrigation would probably be helpful when fall rains do not occur before the crop is mature.—J. T. Rosa.

**Connecticut.**—The potato situation in Connecticut is not as good at the present time as it seemed to be earlier in the season. I assumed that the planting this year was at least 110 per cent as compared with 1923. With our poor weather many men have suffered complete loss, or partial loss. The majority of fields at the present time are not more than 85 per cent of a stand. It would thus indicate that the present acreage of potatoes is less than for 1923. On inspecting the plants I find great variation in the size of the plants. This is particularly true of Maine seed and Vermont seed. The peculiar thing about South Jersey seed this year is, it is as large as Vermont, Maine, or any other strain, and at the same time it has given the most even stand of plants of any strain. This is not true on just one farm, but on several farms.

Our men are making very emphatic statements regarding certified seed and the seeming unwillingness not to include scab and rhizoctonia under certification. Our men as a whole are demanding that these two diseases be included and they are of such a mind that if these diseases are not included they will not buy of men who have this trouble on their potatoes. They are also insisting that certified seed be more carefully graded. If they are going to pay an extra price for this stock they expect to get first-class stock and not ill-shapen, various-sized stock. In fact, the majority of our men have come to the conclusion that we have gone lop-sided on disease control work at the expense of heredity, type of potato, and yield per acre. They claim that these points are just as important as freedom from disease and that it is the

sum total of all these things that make good potato crops, and not just one.—A. E. Wilkinson, June 23.

**Kansas.**—The Third Kaw Valley (Kansas) Potato Tour, held June 2 to 6, 1924, was attended by 411 growers, covering the six leading potato growing counties, Wyandotte, Johnson, Leavenworth, Douglas, Jefferson, and Shawnee.

The purpose of the tour was to bring to the attention of the growers the results that were showing up in the demonstrational and experimental plots as well as to study the progress and the enemies of the crop.

In Wyandotte County seed treatment, certified seed, spindle tuber, and soil fertility plots were examined. The seed treatment plots showed on the average 80 per cent of diseased plants in the untreated, 20 per cent disease in the plots treated with corrosive sublimate, and 10 per cent disease in the plots treated with hot formaldehyde. Some exceptions were noted, but in no case had the treatment failed to give some control. The field of John W. Taylor showed an exceptionally good stand and was in fine shape. Several of the oldest growers in the vicinity stated that they doubted whether or not they had ever seen a better field in that end of the Valley. Most of the fields were treated with hot formaldehyde, although a few strips were treated with corrosive sublimate as a test. Luther Kindred had one of the best pieces of Ohios in the Valley. He stated that he would not show the party his untreated seed for it had a poor stand and also stated that he would not plant another potato without treatment. The certified seed plots that were witnessed in the county showed in some cases greater vigor of vines, earlier maturity and larger potatoes than the commercial seed, while in some cases there was no apparent difference. A few fields were examined that had fine tops that had not been treated, but they showed the tubers rotting at the stolons with the rhizoctonia disease. In general the untreated fields showed a poor stand and poor prospects for a crop. As a whole the crop in Wyandotte County looks very promising at this time.

In Johnson County it was very apparent that the best stands and the best potatoes were in the treated fields. Treated seed again showed from 10 to 20 per cent infection with rhizoctonia while untreated plots showed from 70 to 100 per cent infection. Most of the treated fields had been treated with hot formaldehyde. The field belonging to Ralph Morse was especially promising and showed almost a perfect stand. He stated that he was sorry he let the agent induce him to leave 20 rows untreated for a test for he considered them much inferior to his treated seed. A. Blaylock stated that he estimated his treated seed would make 50 bushels more per acre than his untreated. Johnson County has signed up for Federal shipping point inspection service and as a whole will have some good quality potatoes to put on the market. They expect to begin moving some of the crop about June 25.



In Leavenworth County seed treatment plots were visited at several farms. On the average the treated seed showed as before about 20 per cent infection of rhizoctonia while the untreated seed showed about 80 per cent infection. In the vicinity of Lenape only a part of one field was treated, and it was apparent to all those on the tour that the stand around Lenape was the poorest witnessed on the trip. For some unknown reason the growers there have been slow to take up the treatment. Sweet clover plots showed up to advantage, the vine vigor being better and the soil in better shape than where sweet clover as a green manure crop had not been used. The fields of Omar Browning at Linwood were in good condition. One field containing plots that had received applications of sheep manure showed that the sheep manure gave a stimulus to the vines.

In Douglas County, several tests between the hot formaldehyde and corrosive sublimate treatments were witnessed. The hot formaldehyde plots showed almost perfect control of rhizoctonia while the corrosive sublimate plots showed 80 per cent control, and the untreated plots were from 80 to 100 per cent infected. The fields of F. V. Lewis were some of the best seen on the tour. Certified seed plots did not show greater vine vigor on this farm, but did show the tubers farther developed. On the farm of A. J. Parnell seed from various states was seen. Apparently little or no difference could be seen between the various lots of certified seed, but there was a wide difference between the certified seed and the commercial seed. A total of 120 people attended the tour in Douglas County and at one time there were 34 cars in a string following the route. At noon a picnic dinner was served on the farm of Wm. Stiner, after which several announcements were made and short talks by Jess Haney and Professor Dickens. In Douglas County, the first evidence of leafhoppers was found, and closer examination showed some fields swarming with them. At the present writing it is reported that some of the Ohio fields have been destroyed in this county. Cobblers are showing some injury, and it is hoped that Bordeaux sprays can be applied before they go down. E. G. Kelly, Extension Entomologist, gave warning as soon as he found them, and some of the growers left the tour and got the sprayer out and sprayed all night.

In Jefferson County various plots were examined, and as a whole the treated seed showed a better stand and better potatoes than the untreated seed. One exception was found on the farm of Wm. Gordon at Perry. His treated seed showed practically no advantage over the untreated. He feels that he must have slipped up some way, but cannot locate where his trouble was. The certified plots on the farm of Bell & Son showed a better set and larger tubers in the certified seed than in the commercial seed. On the farm of G. Plummer there was no apparent difference between certified and commercial seed. Seed treatment plots on the farm of Mr. Plummer showed 20 per cent infection in the treated seed and 80 per cent infection in the untreated. On the

farm of Fred Michael and Howard Good, various lengths of treatment with hot formaldehyde were examined as compared with corrosive sublimate. The 90-minute corrosive sublimate and the 4-minute hot formaldehyde treatment showed the cleanest stalks and the best set of potatoes, although the two-minute hot formaldehyde treatment gave fairly good control. A short meeting was held before dinner, and the subject of inspection of potatoes was taken up. The growers signed a petition for inspection and guaranteed 104 cars for inspection if the service was available. This makes the fifth county that has signed, and leaves Leavenworth the only county that has not applied to date.

In Shawnee County a wide variety of plots were visited. As a whole there seemed to be less infection in the Shawnee County fields than in the other counties with possibly two exceptions. The hot formaldehyde plots showed the four-minute treatment giving the best control, although the vine vigor was reduced. Three pints of formaldehyde instead of two to thirty gallons gave better control of rhizoctonia. Tests made with seed treated in the fall instead of the spring showed the fall treatment to be just as effective as the spring treatment. It is felt that this will be a great aid to the grower in being able to treat his seed in the fall when he is not extremely busy, and then he can devote all of his time to his planting in the spring. The fields of M. T. Kelsey and Grant E. Kelsey were the outstanding fields in vine vigor in the valley. James Trant of Edwardsville, who was the first grower to make the tour from one end of the Valley to the other, stated that he thought they were the best he had seen. Herman Theden, also from Wyandotte County, stated that he believed the growers in his county should study the methods of soil building and improvement that the growers in Oakland were using. Certified seed plots showed in some cases a better set than the commercial seed, and in some cases no apparent difference, and in one field not as good a set as the seed used alongside of it. Leafhoppers were damaging the Triumphs, affecting the Ohios to some extent, and the Cobblers showed traces of injury.

As a whole the prospect for a good crop of Cobblers is promising, unless the invasion of the hoppers damages the fields to a large extent. — E. A. Stokdyk.

**Kansas.**—The largest commercial planting in the Arkansas Valley is at Dodge City where approximately four hundred acres were planted this year. To date the stands look very favorable, and a good set of tubers is on the vines. They have been watering and are putting water to them as fast as they can, for they have had considerable dry weather. The certified seed is showing up to a considerable advantage in that district in that it has a better set, and the set already made seems to be larger. If nothing interferes, they will have between two and three hundred bushels per acre.

The potato leafhopper is appearing to some extent in a few



fields, but to date has not bothered the Cobblers. The seed treatment seems to have been very effective in the Arkansas Valley. All seed in that territory was treated with the corrosive sublimate treatment.

At Hutchinson, the potatoes were farther along than they were in the Dodge City district, but not so far along as in the Kaw Valley. They have some very good stands and some good prospects. The Hutchinson growers are just beginning to be interested in potatoes and the prospects for some good yields and good quality stuff are exceptionally good. — **E. A. Stokdyk, June 16.**

**Kansas.** — Digging has started in the Kaw Valley. A few cars rolled on June 25, but today, June 30, starts movement with Shawnee County digging 15 cars. Other counties only a few scattering cars. Stock slightly immature but far enough along to carry well. Market started at \$2.00 per hundred F. O. B.

Mr. J. H. Hoover and the writer just finished a series of grading demonstrations in preparation for U. S. inspection. All but one county has the service and it is available to that county.

A few fields near Topeka show considerable scab. It is confined chiefly to fields that have been in potatoes for a period of years. Most stock is of exceptionally fine quality. Temperature is around 60 degrees, the coolest it has been for some years at this time.

An "S. O. S." was received from Dodge City. The potatoes have apparently stopped growing and blister beetles are hitting the fields hard. Advice is wanted on the advisability of trying to do anything with the crop to save it. A trip will be made tonight. — **E. A. Stokdyk, June 30.**

**Augusta, Me.** — Entries for 23,102 acres of potatoes for certified seed inspection have thus far been received. This acreage represents almost 100 per cent increase over that of last year. An earlier start of the inspection work will be made this season. It is proposed to divide the commercial potato areas in the state into districts, and assign inspectors to these districts. Of the 23 thousand odd acres entered for certification there are 10,520 acres of Green Mountains, 8,296 acres of Irish Cobblers, 4,479 acres Spaulding No. 4, and 318 of Triumphs and a small scattering acreage of other varieties. — **E. L. Newdick.**

**Penobscot County, Maine.** — Although this has been a cold backward spring, planting was completed at nearly the usual time, and the potatoes on the earlier planted fields are now well out of the ground. The stand seems to be nearly perfect in all fields observed in this section.

Many of the farmers treated their seed this year, and nearly everyone planted certified seed, or seed that had been certified the previous year.

I am doing some strain testing on our farm this season. Six strains of Green Mountains are being studied. Some experimental

work in hill spacing and hill selection is also being carried on.

In a recent conversation with a party who has just returned from an extended trip through Aroostook County, I was informed that a large acreage has been planted, reported by this gentleman as being one-third increase over that of last year. This is probably an exaggeration, but think it may be 20 per cent. Am inclined to believe that this section will show some increase over last year's acreage.— **Verdal T. Maxwell, Lee, Maine.**

**Presque Isle, Maine.**—Statements by different growers indicate that the acreage planted to potatoes in Aroostook County is somewhat larger than that of last year, the estimated increase being about 10 per cent. This increase appears to be due chiefly to two causes. First, the large crop of good quality produced last year, which was more successfully marketed than the crops of the past few years, has had a tendency to encourage greater production. Second, on many farms the new seeding of timothy and clover was a failure. In some cases these fields have been plowed up and planted to potatoes, thus giving a greater acreage in such instances than was originally planned.

One of the most significant signs of progress in relation to the potato industry of this section is the interest which is being shown in good seed. More seed from fields which are known to contain but little disease has been planted this year than ever before. The number of growers who are treating their seed is increasing each year.

It is a little early to draw any definite conclusions regarding the stand. The cold, backward spring resulted in considerable delay in planting. After planting, low soil temperatures and lack of rain have retarded germination so that the plants are only just beginning to come through the ground.— **C. F. Clark.**

**Minnesota.**—The Third Annual Minnesota Potato Tour will be held August 5 to 9 inclusive. The territory to be covered this year, extends from Albert Lea in Freeborn County north to Meadowlands in St. Louis County.

The special features of the tour will be as follows:—A study of Minnesota standard varieties of potatoes; seed plots; potato breeding experiments; disease and insect control experiments; fertilizer plots, certification fields; farm storage; value of peat soils for potato production; field conferences; demonstrations; local programs; field inspections and entertainment.

A cordial invitation is extended to everyone interested in the potato industry to see Minnesota's potato crop in the making. Those planning to attend should notify R. C. Rose, Chairman, Minnesota Potato Tour Committee, University Farm, St. Paul, Minn.—**W. Stuart.**

**Missouri.**—On June 26, 1924, the potato growers of western Missouri held a potato tour which, if one may judge from the pro-

gram, must have contained much if interest to those in attendance. The tour started from the Henrietta depot at 9:00 A. M., and the last stop was scheduled at 6:00 P. M., at the farm of Ralph Grubbs, of Missouri City. The strenuousness of this trip can be imagined from the fact that, including the stop for a basket dinner, twenty stops were scheduled for the day. The chief features of interest to those attending the tour, were hot formaldehyde and corrosive sublimate seed treatment plots; fertilizer experiments, strain tests of Irish Cobblers and Early Ohios; comparison of certified seed; and an address at the luncheon hour by T. J. Talbert, head of the Horticultural Department of the Missouri College of Agriculture. — W. Stuart.

**New Jersey.**—More certified seed has been used in Burlington County this year than any time in the past. While in some instances the fields are spotted, especially in the low places, the condition of the crop, generally, is better than it has been for some years. The prospects for good yields are exceptionally bright.—**Charles A. Thompson.**

The potatoes in Salem County are growing rapidly. To date, there is no indication of any blight. A few acres planted with northern grown seed will be ready to dig by July 1st. The prospects for a big yield are good.—**J. Gilbert Borton.**

There is more blackleg in Monmouth County this year than at

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any time in the past 10 years. This is particularly true of Maine grown seed. Fields have been observed where approximately 10 per cent of the plants were affected. Mosaic has been especially severe and has done much toward bringing the local growers to a realization of the value of certified seed potatoes. Some fields of Green Mountains and Giants have been observed in which 95 per cent of the plants were affected with mosaic. A considerable amount of certified seed was planted this year and in every case it has proven to be far superior to the non-certified. This year, at least 60 per cent of the acreage is Cobblers with the remainder Giants, Green Mountains, and Russets.—**Ellwood Douglass.**

Cool weather and abundant rains have favored the development of the potato crop in the southern sections of Middlesex County. Farmers have had some trouble in keeping weeds down.

Mosaic is showing up badly in fields planted with poor seed. Giants seem especially bad in this respect, due no doubt to the limited supply of good seed of this variety. The Giant acreage is small and Green Mountains and Cobblers, the two leading varieties, look better. Most poor stands are due to excessive moisture early in the season.

Digging will not start much before the middle of July and then not on a large scale. Some apprehension is felt by growers on account of the reported lateness of the Virginia crop.—**Orley G. Bowen, June 20.**

The potato growers of central Jersey have completed a most successful tour. Visitors were present from all the important seed potato growing sections and all were impressed with the appearance of the New Jersey crop. In the seed source tests, all lots of certified seed showed up exceptionally well. In most cases, the disease counts were quite low as compared with those in non-certified lots. The yield differences which are certain to result this year between certified and non-certified seed will unquestionably lead to more general use of the former next year.

In the comparison of northern and southern grown seed, while the northern grown seed germinated some 10 days earlier than that grown in South Jersey, there is now no difference in size of the vines between the two lots of seed.

The outlook for a large crop in all the important potato growing sections of the state is particularly good. In some counties where the growers do not specialize in potatoes, the yield will be low. Last week, counts were made in a number of fields in Gloucester County which showed that between 50 and 60 per cent of the plants were infected with mosaic and leaf roll. In a seed source test conducted in this county, four lots of certified seed from as many different sections, showed an average of about 1 per cent leaf roll and mosaic combined, as compared with more than 50 per cent for the seed planted by the grower.

South Jersey growers will begin digging Cobblers about July

15, and by August 1st the crop should be moving rather heavily. The growers in central Jersey will begin to dig about this date.—**Wm. H. Martin.**

The acreage of potatoes in New Jersey is estimated at 92 per cent of last year's. This is not as great a reduction as was indicated by earlier reports. The average decrease in Salem, Cumberland and Gloucester counties was less than 10 per cent. Monmouth County reports similarly, indicating over 90 per cent of last year's acreage. Mercer and Middlesex counties show decisive cuts in acreage. The acreage of Giants is still decreasing in Monmouth County, probably not over 20 to 25 per cent of the total acreage being of this variety. Cobblers comprise 50-60 per cent of the acreage and late round stock the remainder. The condition of the crop was estimated at 85 per cent of a normal.—**State Dep't Agr., June 1.**

**Bridgeton, N. J.**—A tour of Upper Deerfield Township and part of Hopewell was made yesterday with the National Association of Nurserymen, and a normal acreage of potatoes was observed in sections where we have good potato soil. In the lower part of the township the acreage has been reduced about 25 per cent. On well drained land the potatoes are looking good, while in fields having low places, poorly drained, the crop is either drowned out entirely or is showing injury from too much moisture. The early or more advanced fields are blooming freely. A heavy wind and dash of rain swept over this section about 3:30 this afternoon and flattened the potato plants.—**J. Norton Woodruff, June 25.**

**Valley City, Ohio.**—In regard to the potato situation here, no doubt, you know the weather is beyond all comment at present. There will be practically no early or medium, early potatoes in this vicinity. The late potato situation looks very promising so far, with the acreage to be fully normal.

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The writer lives in the Cleveland district where all the marketing is done largely by the growers, either directly to private customers or to retail dealers.

The probabilities of increasing potato growing in this district are too well known to justify much comment. The increasing use of certified northern grown seed speaks very highly for the county agents. The writer would not be surprised if in a few years the use of such seed would be a part of the regular practice of many growers. It appears that the sentiment among many growers is becoming more and more fixed to such practice.

I fully appreciate the fact that one cannot expect to get information without giving it. My own viewpoint is very local. There is no shipping out in this vicinity. No interest is taken in grading, sacking, co-operative selling, etc., because the crop is marketed locally.

There is considerable prejudice against the Russet Rural as compared with the White Rural. The latter sells readily at a premium of 5 to 10 cents per bushel over the Russet Rural. Our local problem is more profitable production or rather reducing the per bushel cost of production.

The advantages of growing potatoes here is that we could sell all the potatoes grown last year for \$1.00 to \$1.25 per bushel, slightly more was obtained through private trade. Transportation and selling costs are 15 to 25 cents per bushel. Eighty cents was the farm selling price. This is rather higher than those reported from other sections.—John J. Longbon, June 18.

**Virginia.**—The movement of the spring crop of Irish Cobbblers from the Norfolk section and the lower end of Eastern Shore has at last started on a large scale. Low prices and heavy shipments from the Carolinas has retarded digging in this section until much later than usual. Exceptionally wet weather is at present retarding the harvest to some extent, but most of the stock is in good condition. The demand at present is strong with an upward trend of prices which is encouraging to the local truckers. The extremely wet weather in May has been responsible for a reduction in yield and will probably be instrumental in boosting the average price of potatoes. On the light sandy areas the crop has suffered from lack of plantfood, as much of that applied at planting time has been leached from the soil. Applications of fertilizer made after the plants came through the ground have in many cases given very striking results. A number of fields have been noted where the crop has been saved from almost total failure by this late application of plantfood. The plants in the rows left untreated were small, yellow, and had died before the potatoes were of marketable size, while the treated vines were large, green, and vigorous. A fertilizer analyzing 10 per cent ammonia, 5 per cent phosphoric acid, and 2 per cent potash is the most popular top-dressing formula. The potash and phosphoric acid is not likely to leach out of the soil as rapidly as the nitrogen, and is therefore



not needed in large quantities in the fertilizer applied to replace the plantfood lost.

On soils supplied with an abundance of humus and plantfood and having a retentive subsoil, the yields will be exceptionally heavy, but the large number of inferior fields will probably lower the average for the state.

The value of good seed was especially evident this season, for weak plants were unable to survive the unfavorable conditions.

Much interest in seed from different sources was evidenced by the farmers on Eastern Shore at the time of the potato inspection tours in Northampton and Accomac Counties this month. Eight demonstration plots planted with seed from the more important seed producing sections were visited, and the comparative growth of the different lots were noted. The result of planting inferior seed was very striking on four plats where non-certified disease-infected seed showed a very high per cent of mosaic with a resulting weak growth. Most of the certified lots showed very little disease, and give promise of high yields. Much interest was shown in the Virginia mountain-grown seed lots which have made an excellent growth, and will likely give as high yields as those obtained from the seed grown farther north. Irish Cobbler seed production in the higher altitudes of western Virginia is still in the experimental stage, and the progress along this line is being keenly watched by many of the potato growers in Tidewater, Virginia, who have been using northern grown seed for their early crop.—W. H. Zimmerly, June 28.

**Wisconsin.**—A preliminary announcement of the 1924 Wisconsin Potato Tour has just been received from Professor Milward. According to this announcement the tour is being organized under the direction of the Horticultural Department of the Wisconsin Experiment Station; The Wisconsin Potato Growers' Association; County Agents; State Departments; Associations of Commerce, and all other organized agencies concerned in potato improvement.

The itinerary of the tour is as follows:

August 13.—Spooner Branch Station, Spooner, Wisconsin.

August 14.—Tour in Barron County.

August 15.—Tour from Barron County to Rhinelander in Oneida County with stopovers at Bruce and Ladysmith in Rusk County.

August 16.—Special excursions to seed potato farms.

August 18, 19, and 20 is to be devoted to inspection of seed producing regions in Oneida, Forest and Langlade Counties.

Automobile transportation will be provided for all who register for the tour.

All inquiries should be directed to J. G. Milward, Horticultural Building, University of Wisconsin, Madison, Wisconsin.—W. Stuart.

**Wisconsin.**—Although we do not have definite figures, we are

expecting our potato acreage in upper Wisconsin will be practically around normal, with the possibility of a 10 to 15 per cent decrease in acreage in the old central belt. It is very difficult, however, to arrive at an estimate of conditions at this date.

The co-operative sales organization for certified seed growers has been completed with the signing of 75 per cent of the growers of certified seed to a five-year contract forming the basis of the co-operative sales organization or pool. We are expecting this organization to handle a large volume of the certified seed business in Wisconsin beginning with the shipping season of 1924.—J. G. Milward, June 27, 1924.

## NOTES ON RECENT LITERATURE

**ANONYMOUS.**—Scottish potato conference.—*The North British Agriculturist* 76: 410, May 29, 1924. —This article is prefaced by the statement that "the Board of Agriculture for Scotland announce that, with a view to demonstrating the importance of potato culture and the value of current experimental and research work in connection with the potato in Scotland, arrangements have been made for holding this summer a conference which will afford an opportunity for inspecting and discussing the work in progress at the Board's Plant Registration Station at East Craigs, near Edinburgh. The conference has been convened at the desire of and in collaboration with Scottish potato growers and traders who have represented to the Board that the variety and scope of Scottish work in connection with potato culture . . . merit fuller publicity."

In addition to the field demonstrations it is intended to have short papers presented by experts on various aspects of potato culture. Two days, August 20 and 21, have been set aside for the conference. The subjects of the papers to be discussed are as follows:—"General review of the Board's work in the registration of immune varieties of the potato and certification of potato stocks;" "Field trials of potato varieties;" "Classification of potato varieties;" "Practical effects of degenerative diseases and variations on potato stocks;" "Potato diseases;" "Potato breeding."—W. Stuart.

**ANONYMOUS.**—Vacuum fumigation opens markets for California potatoes.—*Weekly News Letter California Department Agriculture*, June 14, 1924.—After five years of experimental effort the first commercial plant designed for the treatment of potatoes to destroy tuber moth infestation has been installed and on May 27 the first carload of California potatoes moved into the state of Washington under the joint Washington, Oregon, Utah and Montana regulations. This shipment, according to the author of the article, was treated in a twenty-three mercurial vacuum

with a dosage of carbon disulphide, 30 pounds per 1000 cubic feet. The potatoes were exposed to the gas treatment for 75 minutes. Potatoes treated in this manner may be marketed in any of the above mentioned states, the agricultural officials having agreed to accept this treatment in lieu of field inspection.

The fumigator used has two drums, each 25 feet long and 7 feet in diameter. It is equipped to utilize either carbon disulphide gas, hydrocyanic acid gas, or formaldehyde. The vacuum pump has a capacity of 275 cubic feet of free air per minute.—W. Stuart.

GIBSON, BEN A.—Exchange to make own sales in 1924.—*Col. Potato Grower*, 1: 1 and 3, June, 1924.—Members of the Colorado Potato Growers Exchange are looking forward to selling their potatoes through their own sales organization during the 1924 shipping season. According to general manager Gibson's outline of plan of marketing a traffic and assistant manager will have to be added to the sales organization. It is proposed to use reputable brokers whenever or wherever it is necessary to secure a wider distribution of the crop.—W. Stuart.

WHARTON, J. B.—Centralized grading brings premium to potato growers.—*Col. Potato Grower* 1: 1-2, June, 1924.—The author explains centralized grading of potatoes as that of hauling either from the field or from farm storage of the growers' potatoes to a central grading station or warehouse where the final sorting is carried on by the same crew and inspector. After sorting the first run, stock is then ready to be shipped in new, even-weight, branded bags. The advantages of such uniformity of grading and of even-weight and attractive package is stressed by the author, and examples of 25 to 50 cents premium per sack cited.—W. Stuart.

50.824 SMITH, KENNETH M.—On a curious effect of mosaic disease upon the cells of the potato leaf.—*Ann. of Bot.* 38: 385-388, April, 1924.—In a critical search of the tissue of mosaic-infected potato leaves the author of this article noticed the almost constant presence of a number of peculiar amoeba-like bodies in the leaf cells examined. Sections from both leaf and stem tissue of varying age from mosaic-infected plants were in each case compared with those from a healthy control plant. The tissue was sectioned both transversely and longitudinally in thicknesses varying from six to ten microns and were made to pass through the yellow areas of the diseased plants. The best results were obtained by using Flemming's fixing solution (weak) and staining with Flemming's triple stain. The author's conclusion regarding the nature of these bodies is that they are some kind of degeneration product of the cell, and most probably of the nucleus induced by the mosaic, and that they are effects rather than causes of the disease. Photomicrograph and camera lucida illustrations (figs. 1 to 4) materially aid the reader to a clearer understanding of the nature of these amoeba-like bodies.—W. Stuart.

## MISCELLANEOUS PAPERS

### MINNESOTA ESTABLISHES OFFICIAL GRADE FOR CERTIFIED SEED POTATOES

A. G. Tolaas

A special meeting, which was attended by dealers, growers, experiment station workers and others, was called recently by the Commissioner of Agriculture for the purpose of establishing an official grade for certified seed potatoes. This grade is to be known as "Minnesota Certified Seed Grade" and its requirements are as follows:

"Minnesota Certified Seed shall consist of sound potatoes, which have been field inspected by the Minnesota State Department of Agriculture and which have passed the field inspection requirements, are of one variety, and which at time of final inspection are found to be practically free from dirt or foreign matter, frost injury, sunburn, second growth, growth cracks, hollow-heart, cuts, soft rot, dry rot, and damage caused by disease, insects or mechanical or other means.

Scab infection allowed ..	10%	of tubers with slight infection.
Rhizoctonia .....	10%	of tubers with moderate infection.
Stem end discoloration ..	5%	" "
Spindle tuber .....	1%	" "
Late blight rot .....	0%	" "
Powdery scab .....	0%	" "
Potato wart .....	0%	" "

**Type.**—90 per cent of tubers must conform to characteristic type of the variety.

**Size.**—As per sales agreement. Otherwise the diameter of the potatoes of round varieties shall not be less than one and seven-eighths inches, and of potatoes of long varieties one and three-quarters inches.

In order to allow for variation incident to grading and handling, 5 per cent by weight of any lot may be under the prescribed size. In addition 3 per cent by weight of any such lot may be below the remaining requirements of the grade except that no soft rot due to blackleg or late blight shall be allowed.

All inspections are to be made by duly authorized inspectors of the Minnesota State Department of Agriculture."

After two years' experience, using U. S. No. 1 Grade as a standard, we have come to the conclusion that it is not entirely satisfactory. During the marketing season just passed, approximately 300 cars of certified seed potatoes were inspected for grade, before leaving the state, of which 60 per cent graded 3 per cent or less than 3 per cent defects, many of them being below 2 per cent. The fact that 60 per cent of the cars leaving the state graded

less than 3 per cent defects indicates a desire on the part of the majority of certified seed potato growers to put up their stock for sale in first class shape. No matter what the field inspection records may be, a car of certified seed potatoes must have a nice

appearance when it reaches the consuming end of the line, and with this idea in mind we have established the "Minnesota Certified Seed Grade" as a basis for grading Minnesota certified seed potatoes in the future.

## CHANGES IN WISCONSIN SEED POTATO INSPECTION SERVICE

J. G. Milward

The attention of growers and shippers of certified seed potatoes in Wisconsin is called to the following changes in the service affecting the 1924 crop.

During the 1924 potato shipping season, a series of conferences were held in the important certified seed producing sections of Wisconsin. At these conferences, arranged jointly by the Horticulture Department, Wisconsin Experiment Station and the Wisconsin Department of Markets, certain recommendations were made relating to changes in potato regulations.

On June 10, a meeting of the Advisory Seed Potato Inspection Board was held at Madison, to discuss regulations governing certified seed potato shipments. On the basis of recommendations made at the above conferences, the seed potato inspection service and the Wisconsin Department of Markets have agreed upon the following changes to go into effect at the beginning of the 1924 potato shipping season.

First.—Beginning in 1924, the certificates issued to the grower will bear a serial number. (Each grower's number to be attached to certificate and tags as indicated below.)

Second.—A loading point inspection will be required at the time of shipment. This inspection will be supplied under the regular regulations provided by the Wisconsin Department of Markets.

Third.—The regular official shipping tags (Badger State Brand) will be supplied to the grower or shipper by the inspector at the time the loading point inspection is made.

Fourth.—The official tags issued will be numbered, the number on the car certificate and tag issued by the Wisconsin Department of Markets, to correspond to the number of the certificate issued to the grower by the inspection service as provided in paragraph one.

Attention is called to the existing regulation, namely, that all certified seed potato shipments must be graded in accordance with Badger State Brand requirements. (Badger State Brand require-



ments are published by the Wisconsin Department of Markets and all growers and shippers are requested to secure a copy of this grade.)

All interests involved in the growing and shipping of certified seed potatoes are agreed that the above regulations must be faithfully carried out if Wisconsin's interests are to be protected in the important seed potato markets of the country.

The Inspection Service and the Wisconsin Department of Markets submits these changes with the special object in view of expanding Wisconsin's seed markets in the interests of both the grower and the trade.

The Horticultural Department, Wisconsin Experiment Station, also announces at this time that the regular field inspection service (summer and bin inspection) will be offered to the grower in 1924 on essentially the same basis as prevailed in 1923 except that the special fee for Advertising and Publicity for those receiving certificates will be \$1.50 instead of \$1.00 as in 1923.

In submitting the above changes, the Inspection Service calls attention that under the Wisconsin plan, seed potato certification based on field and bin inspections is administered by the Horticultural Department, Wisconsin Experiment Station. The grading and shipping of certified seed is administered by the Wisconsin Department of Markets in accordance with the published regulations of that Department.

### **A GLANCE AT THE MARKETS**

**(Contribution from the Fruit and Vegetable Division, Bureau of Agricultural Economics, U. S. Dept. of Agr.)**

Notable price changes usually occur during June, and the past month was no exception. Old potatoes made their final spurt and then gradually weakened. New stock, on the other hand, reached the bottom of a long decline, hesitated for a while, and then began to climb again in price. Shifting of the sources of supply was the principal cause of these changes. Florida, Georgia, the Carolinas, Alabama, Louisiana, and Texas had been sending heavy shipments to market the last few months. As these southern sections began to exhaust their supplies, there came the customary lull just before potato movement becomes heavy from Virginia, Maryland, New Jersey and the central areas. The pre-eminence of Virginia as an early-potato State makes July an important potato month. About 19,700 carloads came from Virginia during the 1921 season, approximately 18,800 in 1922, and somewhat over 15,000 cars last season. Present prospects are for a bigger crop than last year, but not so many Virginia potatoes as in 1922 or 1921. The season is late, too.

Early in June, South Carolina Cobblers sold at \$3.50-\$4 per barrel, f. o. b. shipping points, and southern Triumphs at \$1.50-\$1.75 per 100-pound sack. Carolina stock declined about \$1.25 to



its lowest level, and Alabama Triumphs struck the bottom at \$1.25 per sack. But, by the end of the month, North Carolina shipping points had advanced to \$3.50 a barrel, with Onley, Va., reporting Cobblers at \$4. Like fluctuations were observed in city wholesale markets, in reaction to the carlot arrivals. From an opening of \$4 - \$5 per barrel, eastern stock slumped as low as \$3 about mid-June and then straightened to top of \$6 in New York City and \$4.75 elsewhere. Triumphs were bringing \$3 a sack by the end of June. General ranges of eastern new potatoes, however, were not quite so high as a year ago, for larger crops have been the rule.

Compared with the wind-up last season, recent weekly shipments of old potatoes have been only about half as heavy. Exceptional yields in Maine were offset by fewer acres and smaller production in the North Central sections and the West. Stocks cleaned up rapidly in the far West. Early June found old potatoes in a fairly strong position. Round whites were jobbing in eastern markets at \$1.85 - \$2 per 100 pounds, and at \$1.50 - \$1.75 in Chicago, with Idaho Russets touching \$2.50. New York City quoted Maine Green Mountains at \$2.65. A year ago, Chicago carlot sales ruled 70 cents to 80 cents on northern stock. But the dwindling supplies of old potatoes the present season did not long hold their advantage. At the end of June round whites averaged \$1.75 in eastern consuming centers, and \$1.30 in the Middle West.

Including both early and late potatoes, the 1922-23 season broke all records with a total of 254,000 carloads, as against 238,000 the previous season. Shipments from the 1923 crop have run about the same as two years ago and aggregate slightly more than 240,000. Maine leads with about 35,000 cars, and Minnesota is a close second. The reverse was true a year ago, when Minnesota topped the list with 29,000 cars. Next largest shipping states this season are Michigan with 19,500 cars, New York 18,500, Wisconsin 17,000, Idaho 15,500, Colorado 14,000, and North Dakota 10,500 cars.

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## HOW MUCH FERTILIZER?

W. J. Spillman, U. S. Dep't Agriculture

A recent discovery makes it possible to tell, with a fair degree of accuracy, what amount of fertilizer to the acre will give the greatest profit. This discovery was made independently by the writer and by Dr. E. A. Mitscherlich, of Germany. Briefly stated, it is this:

Taking any convenient quantity as the unit of fertilizer, if the second unit produces, say, 90 per cent as much increase in yield as the first unit produces, then each additional unit tends to produce an increase in yield which is this same percentage of the increase produced by the preceding unit.

Thus, if 400 pounds of a 4-8-3 fertilizer produces a yield increase

of 20 bushels, and 800 pounds a yield increase of 38 bushels, the second 400 pounds produces an increase of 18 bushels, which is 90 per cent of 20 bushels. Then a third 400 pounds should produce an additional yield of 90 per cent of 18 bushels, which is 16.2 bushels; a fourth unit should add 90 per cent of 16.2 bushels to the yield, or 14.58 bushels; and so on.

The law involved here may be called the Law of Percentage Increase. Any unit of fertilizer tends to produce the same percentage increase as compared with the preceding unit.

Table I shows the application of this law to a potato experiment conducted by the New Jersey Experiment Station. The first column shows the amounts of fertilizer used on the different plots, the second column the acre yields obtained, while the third column shows the yields calculated on the assumption that the law of percentage increase applies to this case.

TABLE I.

Pounds of 4 - 8 - 3 fert. per acre	Yield in bushels		Difference
	Actual	Calculated	
None	188	189.328	1.328
400	208	205.994	-2.006
800	220	221.313	1.313
1200	240	235.394	-4.606
1600	244	248.338	4.338
2000	258	260.235	2.235
2400	274	271.171	-2.829
2800	281	281.223	.223

It must be admitted that the calculated yields agree fairly well with those actually obtained. The greatest difference is only 2 per cent of the observed yield; most of them are much less than this. I have applied this same law to the results of some eighteen different experiments with different crops on different soils, and in all of them the agreement is about as satisfactory as this. The law also applies to size of seed piece, as I shall show below; also to increasing application of irrigation water. It also applies to the gains made by fattening animals for each additional unit quantity of feed consumed. Dr. Mitscherlich has shown its application to hundreds of experiments conducted in his country.

If the law really holds, then it is merely a matter of mathematical calculation to find the most profitable quantity of fertilizer to use. This will depend on the relative prices of potatoes and fertilizer, or on what I have called the Potato-Fertilizer ration. This is the number of bushels of potatoes required to buy a ton of fertilizer. The price that must be used for potatoes in this case is not the market price, but the market price less those costs that increase as the yield increases. These are cost of picking up, sacking, grading, storing, and marketing. In what follows, when I

speak of the Net Price of potatoes, I mean the market price less the costs just mentioned.

TABLE II

Potato Fertilizer Ratio	Most profitable amount of fer- tilizer to the acre
40	3683 lbs.
50	2623 "
60	1758 "
70	1026 "
80	392 "

Table II gives the quantity of fertilizer per acre that gives the greatest profit per acre under the conditions of the New Jersey experiment the results of which are given in Table I. This law takes no account of injury from excessive quantities of fertilizer. The figure 3683 in Table II merely means that this quantity of fertilizer would give the most profit to the acre if the yield continued to increase in accordance with the law of percentage increase, and if the price of potatoes was such that at the "net price," 40 bushels of potatoes could be exchanged for a ton of 4-8-3 fertilizer.

Table II shows that when 50 bushels of potatoes, at the net price, will buy a ton of 4-8-3 goods, under the conditions stated the most profitable application of fertilizer would be 2623 pounds to the acre. But when potatoes fall so low in price that it takes 80 bushels to buy a ton of fertilizer, it pays to use only 392 pounds of fertilizer to the acre.

All these findings are so new that we hardly know how to use them. But it is readily seen that they hold important possibilities for the users of fertilizers. Before the newly discovered law can be used in any given case it must first be determined by experiment how much increase in yield one unit of fertilizer, of a given kind, will produce, and what percentage of this increase the second unit will produce. When these two facts are known, it is then easy to find the most profitable application per acre.

It happens that the percentage factor in the New Jersey experiment discussed above, when the unit of fertilizer is taken as 400 pounds of 4-8-3 goods, is 91.9 per cent (more exactly, 91.9188 per cent). The greatest yield that could be obtained in this case is 395.56 bushels per acre, and the greatest increase in yield (over no fertilizer) that could be obtained is 206.232 bushels. The calculated increases due to the first 400 pounds is 16.662 bushels.

In another New Jersey experiment, the percentage of potash in the fertilizer was experimented on. On four plots the fertilizer applied was 1600 pounds to the acre in each case, the first plot getting 4-8-0 goods, the second 4-8-3, the third 4-8-6, and the fourth 4-8-10. The most profitable percentage of potash in this case turned out to be as shown in Table III.

TABLE III

Net price of potatoes	Most profitable percentage of potash
.60	4.6
.70	4.9
.80	5.2

In these calculations it is assumed that a pound of nitrogen costs 25 cents, a pound of phosphoric acid 6 cents, and a pound of potash 6 cents.

In a similar experiment in Massachusetts it turns out that the most profitable percentage of potash is slightly more than twice as great as the above results for New Jersey. Apparently the Massachusetts soil on which this test was made is more potash hungry than the New Jersey soil.

The New Jersey Potato Growers' Association report an experiment on size of seed piece. Their findings are given in the first two columns of Table IV.

TABLE IV

Size of seed piece (oz.)	Yield in bu. per acre		
	Actual	Calculated	Dif.
½	138.52	138.42	— .10
1	165.70	166.20	.50
1½	180.31	179.48	— .83
2	185.40	185.83	.43

The third column of this table gives yields calculated on the assumption that the law of percentage increase applies to this case also. They are seen to agree very well with the actual yields obtained. The most profitable size of seed piece in this case turns out as follows: with the net price of potatoes at 60 cents a bushel, .94 oz.; 70 cents a bushel, 1.03 oz.; 80 cents, 1.11 oz.; \$1, 1.24 oz. Under normal price conditions it is therefore probable that seed pieces weighing about one ounce would be most profitable.

Before the law discussed here can be of great usefulness to farmers, it is necessary that fertilizer experiments be planned and conducted expressly for the purpose of finding out the effect of increasing quantities of the same fertilizer. It will take some years to work out this problem. But when this work is done farmers will know much more about how much fertilizer it will pay them to use than they now know.

## POTATO SEED SOURCE TESTING IN NEW YORK

E. V. Hardenburg

For about six years potato seed source demonstrations have de-

manded considerable attention from farm bureau agents in most of the counties of New York State. These demonstrations have been done in co-operation between the respective farm bureau associations and the Department of Vegetable Gardening at Cornell. The primary objects have been mainly three-fold, namely, to assist potato growers locally in determining whether better strains of seed could be obtained away from home, to compare certified seed and common stock and to demonstrate the fact of wide variation in disease content and yield between different strains of a given variety. As a result of these demonstrations potato growers in New York have come to a more complete realization of the importance of changing seed stock than ever before. In many instances growers who have been using the same strains of seed for fifteen to twenty years have been surprised to learn by first hand observation of the fact that mosaic and leaf roll have been responsible for reduced yields and the commonly so-called "running out" of seed and seed stock.

In spite of what has been accomplished in potato seed improvement by the above mentioned farm bureau demonstrations there has developed an increased opinion that the results of such demonstrations were not sufficiently far reaching because of a lack of sufficient care and accuracy in planting, harvesting and computing the results of the demonstrations. Accordingly, the Department of Vegetable Gardening at Cornell has this year begun two long-time comprehensive seed source tests which will serve as a check on the more frequently used farm bureau demonstration and, at the same time, give a more accurate indication as to the location and evaluation of the best strains of seed available.

One of these tests is located on the farm of John A. Child, Malone, Franklin County, New York, and includes this year nineteen strains of Green Mountains and nine strains of Irish Cobblers. These two varieties are being tested exclusively in Franklin County because of the fact that this is an important seed-growing section of Northern New York and because the soil and climate of this region are well adapted to these two varieties. The other test is located on the farm of H. L. Beecher, Livonia, Livingston County, New York, and this year includes thirteen strains of the Smooth Rural type and six strains of the Russet Rural type. The Livingston County test is located in Western New York on soil typically used in growing the Rural type throughout his region.

The basis used in choosing the strains to be included in these tests was freedom from disease and yield as recorded on the certified seed inspection reports of 1923. In the case of several of the strains of Green Mountains the strains selected showed absolutely no disease in the 1923 report. Other strains will be added to the test in future years as new strains of high quality are discovered. Strains already included may be dropped from the test in case they develop disease or fail to show a consistently high yield. In fact, the final basis for recommending strains as foundation stock will take into account such factors as freedom from disease, and the ability to

maintain a high yield. The test plots will be inspected, rogued early for disease and off-type hills and a careful record of such factors recorded for each strain. Each of the test plots has been layed out so as to allow of ten replications of each strain, each strain being planted in twenty-five hill units. It is the hope that not only the members of the New York Seed Improvement Co-operative Association, but also individual potato growers throughout the state will find the results of these tests of service to them in locating strains of seed sufficiently worthy to be used as foundation stock.

### A NEEDED LINE OF STUDY ON THE POTATO

Daniel Dean, Nichols, N. Y.

Examination of the literature of the potato shows how great is the variation between the amount of study given to one branch of the subject and other branches, and how the study given to each varies from time to time. Some have been worked on till their possibilities are practically exhausted. Others have been barely touched. Better co-ordination of effort is needed for national efficiency. There is little use of increasing the size of the potato crop by 5,000,000 bushels through effort in one direction and at the same time allowing that much or even more to be lost later through lack of study of another more needed line of work.

A very striking example of such lack of study is that of potato storage. About half of our whole crop is put into storage for longer or shorter periods. Between the number of bushels produced by the farmer and the number used by the ultimate consumer for food, and by the grower as seed there is a large difference. This difference is a national loss. When, as is too often the case, the tubers used for seed have been injured in vitality through poor storage conditions, a further loss occurs in the next year's production.

Compare the scanty literature on potato storage with the wealth in other directions. The middle of the last century saw the attention of growers and of the few scientists of that day largely concentrated on the production of new potato varieties. In succession a number swept over the United States in waves of popularity. Towards the end of the century market demands coupled with climatic conditions have stabilized potato production in the different areas of large production. Each is coming to specialize on those best adapted to its peculiar conditions. With the early days of experiment stations there was a strong demand for study of tillage and planting methods. The distances of planting, size of seed piece, number of eyes, depth of planting and the time, number and depths of cultivation were studied till scientists and growers have united upon standardized methods for each local condition.



The early days of this century brought a rush of interest to the study of improvement of the potato by means of selection of strains within the variety, either for yield, or for other desired qualities as hoped for powers of resistance to various diseases. Unfortunately, these lines of work have very largely proved to be blind alleys.

The last decade has seen scientific study of the potato develop very largely on the side of plant pathology. Several of the serious diseases of the potato have been brought under control. Whereas with the virus diseases no control methods have been found, the diseases have been rendered less harmful by the isolation and multiplication of strains relatively low in disease, in a word, certified seed.

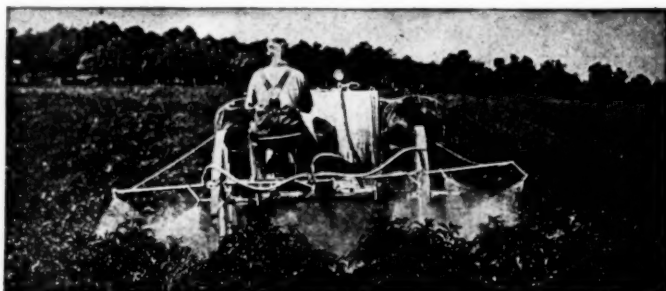
Part of the problems of certified seed are completely solved. I remember how the New York State Potato Association was formed largely for the purpose of improving the seed supply for Long Island growers. The varietal mixtures, common scab and poor sizing are very nearly things of the past today, and in place of the 1914 troubles the grower has to contend with things of which he did not even know the name then.

The buyer of certified seed is constantly raising his standards, as here and there growers or producing sections raise the standard of production. The trade in certified seed is going where improved methods are introduced. Certified seed production is fast becoming a race, with huge financial rewards to the most progressive growers and sections, and also indirectly, to the institutions which help most to forward progress in their states.

Certified seed is to a great degree the product of the plant pathologist. Without his assistance the progress of the grower would have been far slower and more difficult. Up to the present the pathologist has given far more work to the growing plant than to the tuber in the period of storage. Buyers very frequently find great differences in certified seed which are difficult to account for. Some lots give very poor stands, or arrive at point of destination with rot starting in the sacks after long railroad trips. I have had several disagreeable and costly experiences in this way. Several lots of seed which had shown very high grade when considered on their inspection reports for such diseases as mosaic and leafroll were poor in regard to either rot in spring or on account of poor stands after planting. This experience has occurred with shipments from a number of states and provinces, and from quite a number of growers. I feel that there is strong probability that the cause of trouble under many separate conditions must have been connected with storage conditions, particularly as in every case other shipments from different growers or sections were free from the troubles of rot and poor stand.

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